FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

May 24 to June 6, 2015 (weeks 21 and 22)

Overall Summary

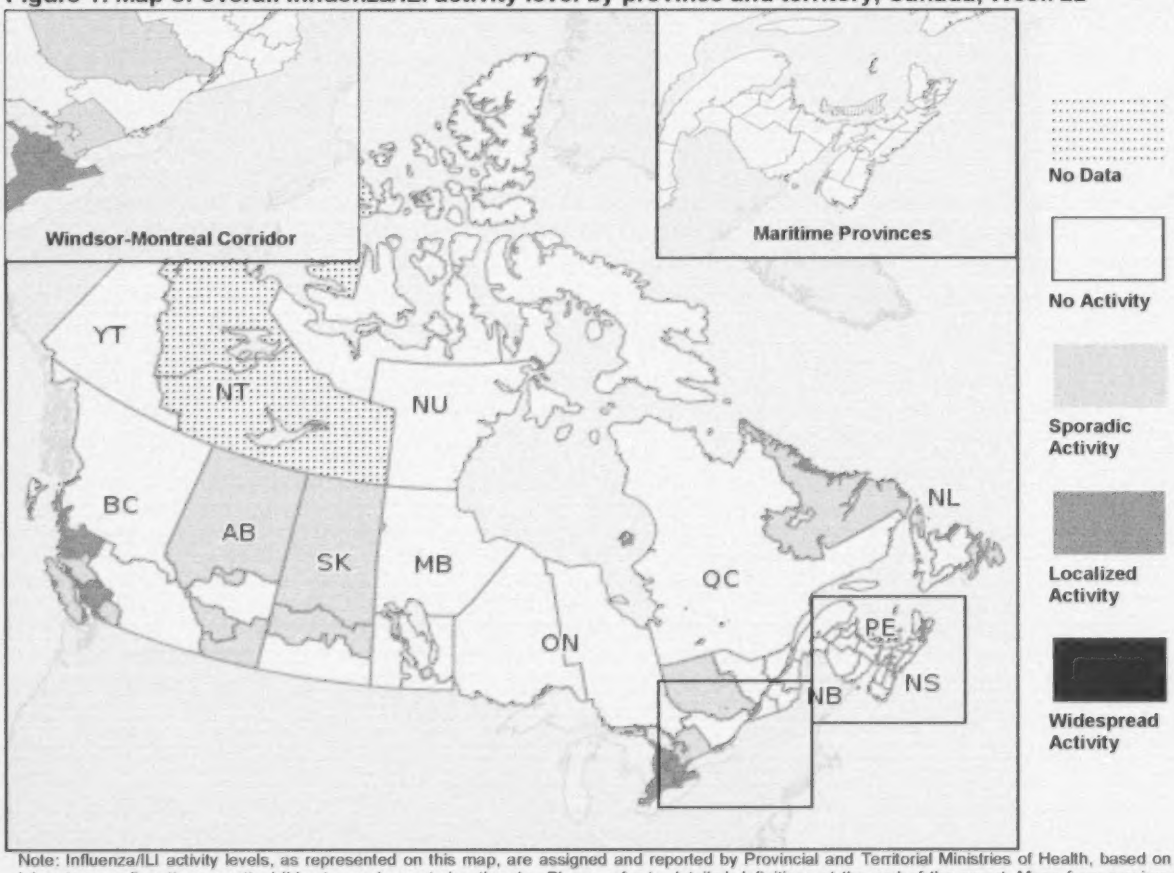
- Influenza B continues to be the most common influenza virus circulating in Canada; however, influenza B is past its peak and remains within expected levels for this time of year.
- Overall, influenza activity in Canada continues to decrease as we approach the end of the influenza season.
- Based on laboratory detections, influenza B is having a greater impact on adults less than 65 years of age compared to influenza A(H3N2), which predominated earlier in the season.
- Positive laboratory detections continued to decline in weeks 21 and 22.
- An outbreak of MERS-CoV in the Republic of Korea has resulted in 126 cases and 11 deaths. Contact tracing is ongoing. The risk to Canadians remains low.

Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2014-15 influenza season?
Contact us at FluWatch@phac-aspc.gc.ca

Influenza/ILI Activity (geographic spread)

In week 22, three regions reported localized activity: BC, ON(2). Fourteen regions reported sporadic activity: BC(2), AB(4), SK(2), MB, ON(2), QC, and NF(2). Thirty-eight regions have reported no activity.

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 22

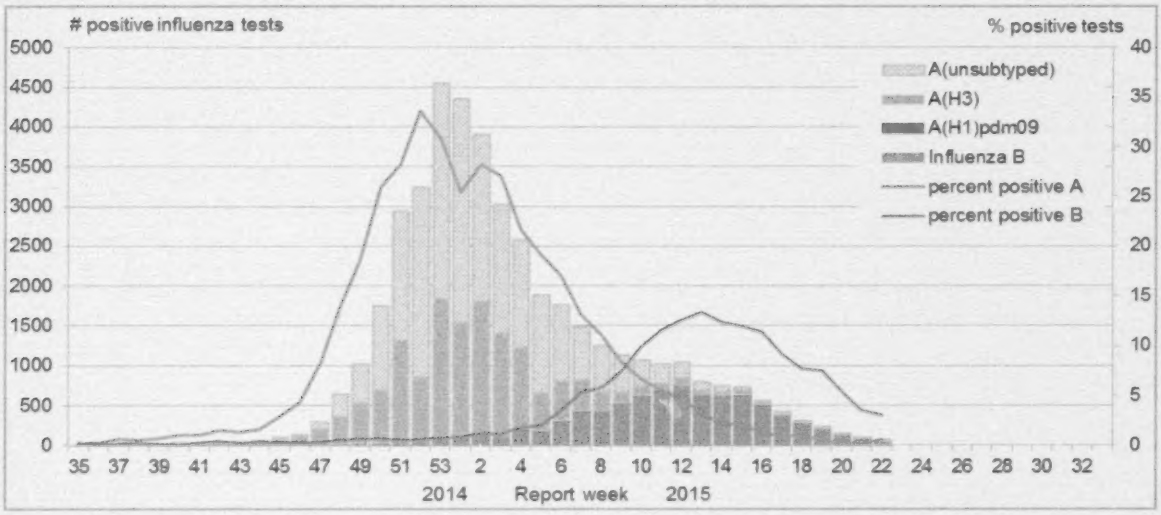


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests decreased from 124 in week 20 to 81 in week 21 and further decreased to 53 in week 22. The positivity rate for influenza continued to decline in weeks 21 and 22 (3.8% and 3.6% respectively). Influenza B remained the predominant virus, representing 81% of influenza detections. To date, 80% of influenza detections have been influenza A (Table 1). Furthermore, detailed information on age and type/subtype has been received for 38,227 cases (Table 2). Adults ≥65 years of age have predominantly been affected by influenza A, accounting for 62% of influenza A detections. Influenza B, while much smaller in numbers, is affecting a greater proportion of individuals less than 65 years of age. Adults under the age of 64 years accounted for 63% of influenza B detections.

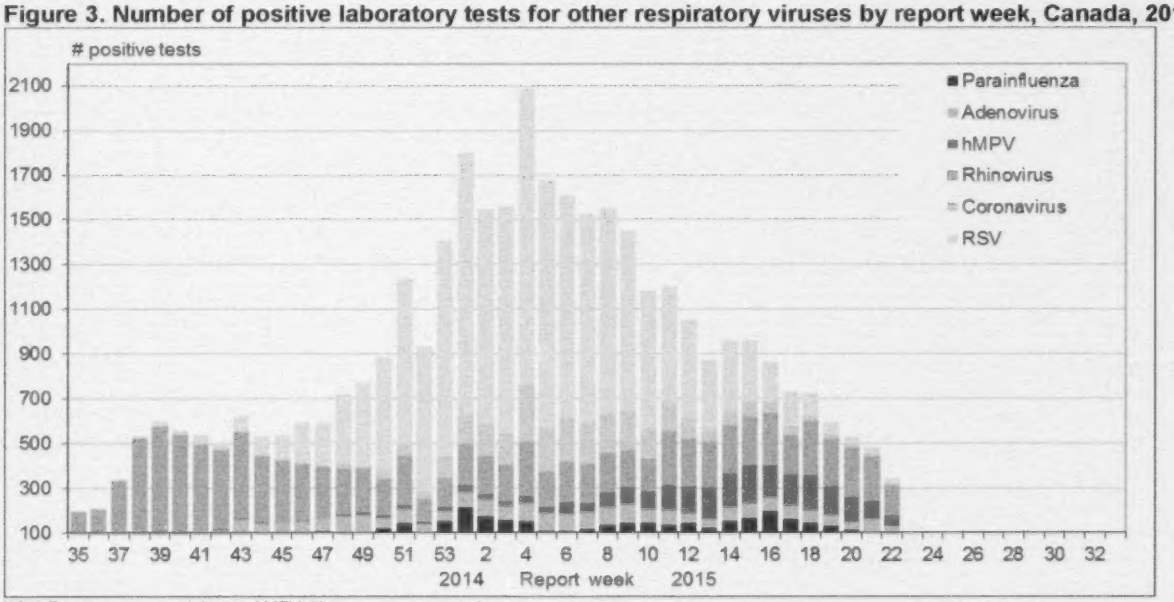
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2014-15



In weeks 21 and 22, detections for all other respiratory viruses decreased from the previous week and are approaching inter-seasonal levels (figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2014-15



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2014-15

Reporting provinces[1]	Weekly (May 31 to June 6, 2015)					Cumulative (August 24, 2014 to June 6, 2015)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	6	0	4	2	3	3531	28	2633	870	492
AB	1	0	1	0	15	3703	14	3534	155	990
SK	0	0	0	0	4	1315	0	839	476	374
MB	0	0	0	0	0	1124	1	390	733	224
ON	2	0	2	0	16	11169	50	4717	6402	1539
QC	1	0	0	1	1	11454	4	422	11028	3907
NB	0	0	0	0	2	1195	0	193	1002	536
NS	0	0	0	0	0	511	1	123	387	263
PE	0	0	0	0	0	131	1	128	2	109
NL	0	0	0	0	2	629	0	123	506	78
Canada	**10**	**0**	**7**	**3**	**43**	**34762**	**99**	**13102**	**21561**	**8512**
Percentage[2]	18.9%	0.0%	70.0%	30.0%	81.1%	80.3%	0.3%	37.7%	62.0%	19.7%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2014-15

Age groups (years)	Weekly (May 31 to June 6, 2015)					Cumulative (August 24, 2014 to June 6, 2015)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	0	0	0	0	6	2091	22	809	1260	560	2651	6.9%
5-19	1	0	0	1	2	1783	6	957	820	784	2567	6.7%
20-44	0	0	0	0	4	3863	19	1659	2185	1691	5554	14.5%
45-64	0	0	0	0	5	3873	20	1661	2192	1811	5684	14.9%
65+	3	0	1	2	7	18751	15	7295	11441	2893	21644	56.6%
Unknown	0	0	0	0	0	120	0	101	19	7	127	0.3%
Total	4	0	1	3	24	30481	82	12482	17917	7746	38227	100.0%
Percentage[2]	14.3%	0.0%	25.0%	75.0%	85.7%	79.7%	0.3%	41.0%	58.8%	20.3%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Antiviral Resistance

During the 2014-2015 influenza season, the NML has tested 1,682 influenza viruses for resistance to oseltamivir and 1,679 influenza viruses for resistance to zanamivir. All viruses were sensitive to zanamivir and one influenza A(H3N2) virus was resistant to oseltamivir. A total of 1,454 influenza A viruses (99.9%) were resistant to amantadine (Table 3). One virus was susceptible to amantadine.

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2014-15

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	934	1	932	0	1432	1431 (99.9%)
A (H1N1)	22	0	22	0	23	23 (100%)
B	726	0	725	0	NA[1]	NA[1]
TOTAL	1682	1	1679	0	1455	1454

[1]NA: Not Applicable

Influenza Strain Characterizations

During the 2014-2015 influenza season, the National Microbiology Laboratory (NML) has characterized 1050 influenza viruses [208 A(H3N2), 21 A(H1N1) and 821 influenza B].

Influenza A (H3N2): When tested by hemagglutination inhibition (HI) assay (n=208), one virus was antigenically similar to A/Texas/50/2012, five showed reduced titers to A/Texas/50/2012 and 202 were antigenically similar to A/Switzerland/9715293/2013, which is the influenza A(H3N2) component recommended for the 2015 Southern Hemisphere influenza vaccine. Additionally, 1,199 A(H3N2) viruses were unable to be tested by HI assay; however, sequence analysis showed that 1,197 belonged to a genetic group that typically shows reduced titers to A/Texas/50/2012. **Influenza A(H1N1):** Twenty-one A(H1N1) viruses characterized were antigenically similar to A/California/7/2009. **Influenza B:** Of the 821 influenza B viruses characterized, 747 viruses were antigenically similar to B/Massachusetts/2/2012, three viruses showed reduced titers against B/Massachusetts/2/2012, and 74 were B/Brisbane/60/2008-like (Figure 4).

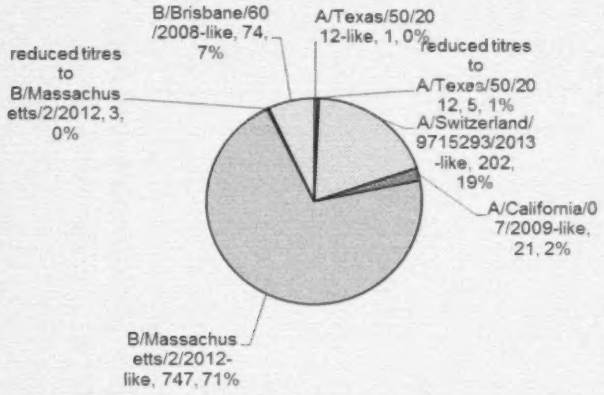

B/Brisbane/60 /2008-like, 74, 7%
A/Texas/50/20 12-like, 1, 0%
reduced titres to A/Texas/50/20 12, 5, 1%
reduced titres to B/Massachus etts/2/2012, 3, 0%
A/Switzerland/ 9715293/2013 -like, 202, 19%
A/California/0 7/2009-like, 21, 2%
B/Massachus etts/2/2012- like, 747, 71%

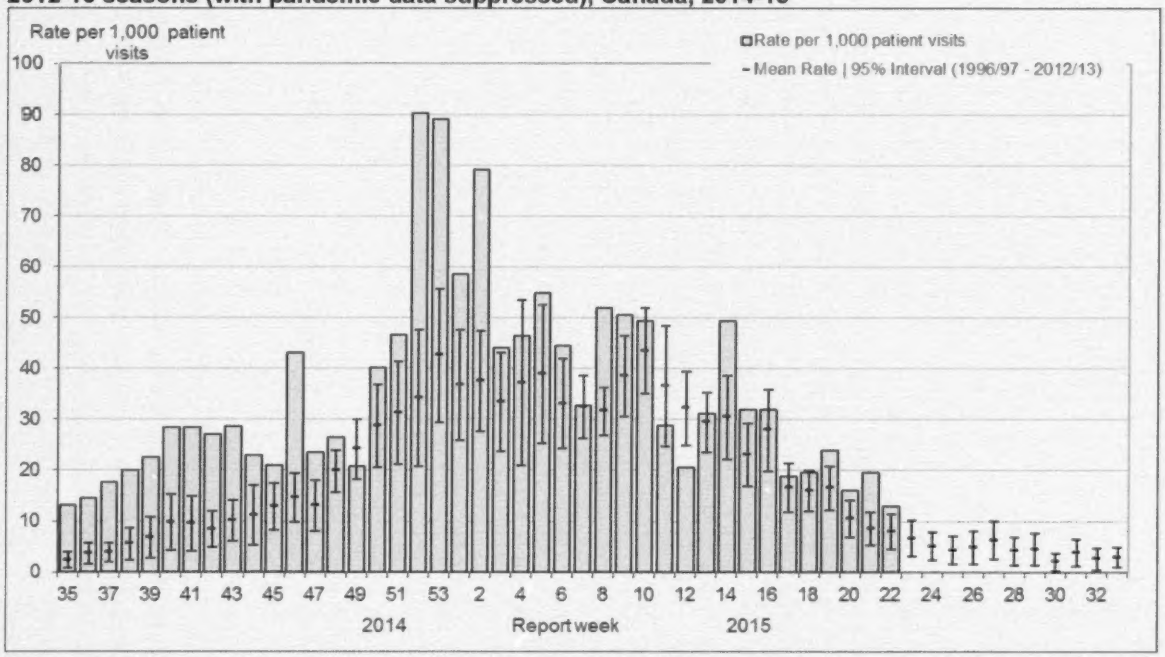
Figure 4. Influenza strain characterizations, Canada, 2014-15, N = 1050

The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

Influenza-like Illness Consultation Rate

In week 22, the national influenza-like-illness (ILI) consultation rate decreased from the previous week to 12.8 consultations per 1,000 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2014-15

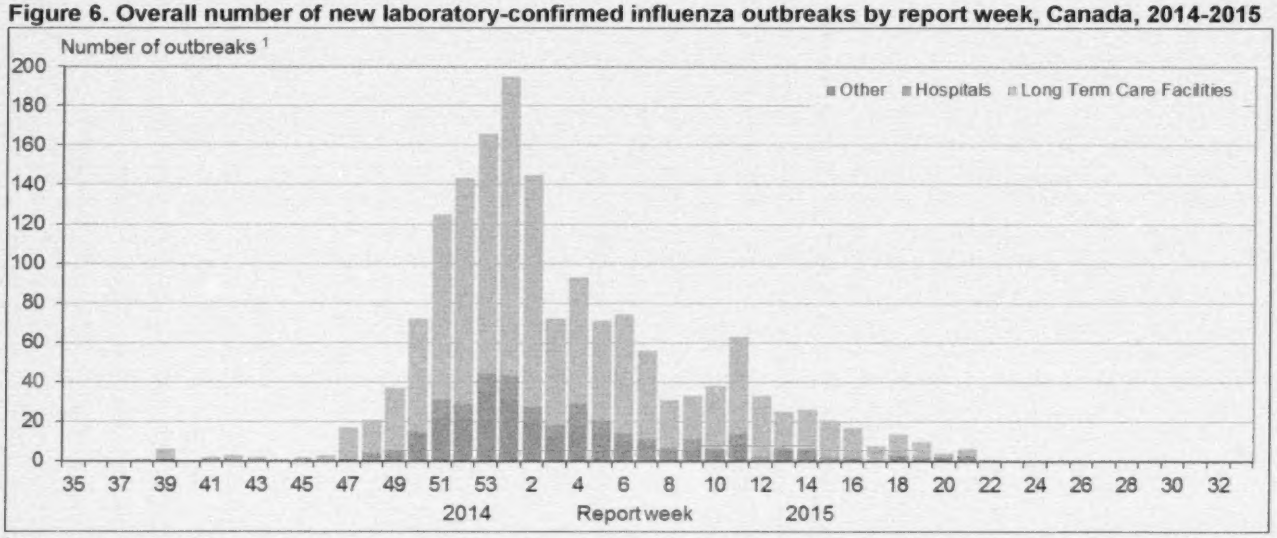


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 22 one new outbreak of influenza was reported in a long-term care facilities (LTCF) (Figure 6). To date this season, 1,279 outbreaks in LTCFs have been reported and the majority of those with known subtypes were attributable to A(H3N2). There have been a higher number of reported influenza outbreaks to date this season compared to the same period in previous seasons.

Figure 6. Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2014-2015

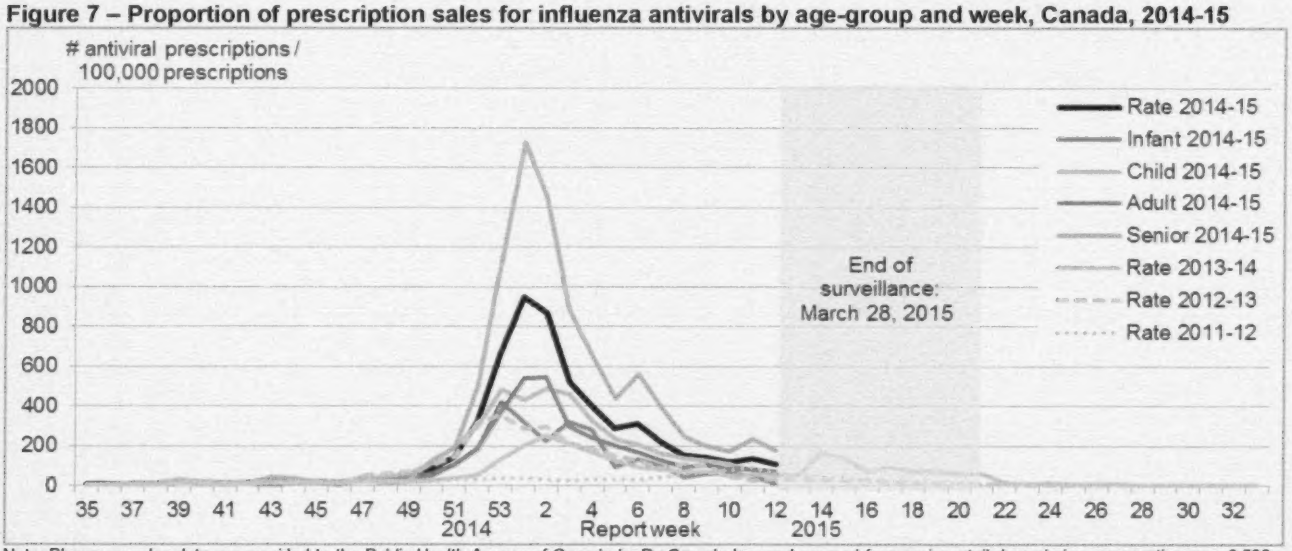


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

Pharmacy surveillance for sales of influenza antivirals has ended for the 2014-2015 influenza season (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2014-15



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In weeks 21 and 22, ten laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network. All but one case were due to influenza B (Figure 8a). A greater proportion of cases have been reported with influenza B in recent weeks, following the trend in laboratory detections. Among the reported cases, seven were <2 years of age and three (33%) were 2 to 9 years of age. Two ICU admissions were reported.

To date this season, 705 hospitalizations have been reported by the IMPACT network, 511 (73%) of which were cases of influenza A. Among cases for which the influenza A subtype was reported, 98% (163/166) were A(H3N2) (Table 4). To date, 94 cases were admitted to the ICU, of which 52 (55%) were 2 to 9 years of age (Figure 9a). A total of 59 ICU cases reported to have at least one underlying condition or comorbidity. Five deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (CIRN)

Surveillance has ended for the 2014-2015 influenza season.

This season, 2,228 cases have been reported; 1,912 (86%) with influenza A. The majority of cases (81%) were among adults ≥65 years of age (Table 5). One hundred and seventy two ICU admissions have been reported and 128 cases were adults ≥65 years of age. Among the 172 ICU admissions, 27 were due to influenza B (12 in adults 45 to 64 years of age and 15 in adults over the age of 65). A total of 123 ICU cases (72%) reported to have at least one underlying condition or comorbidity. Of the 123 ICU cases with known immunization status, 40 (33%) reported not having been vaccinated this season. One hundred and thirty-five deaths have been reported, 124 (92%) of the deaths were adults >65 years of age (Figure 9B).

Note: The number of hospitalizations reported through CIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2014-15

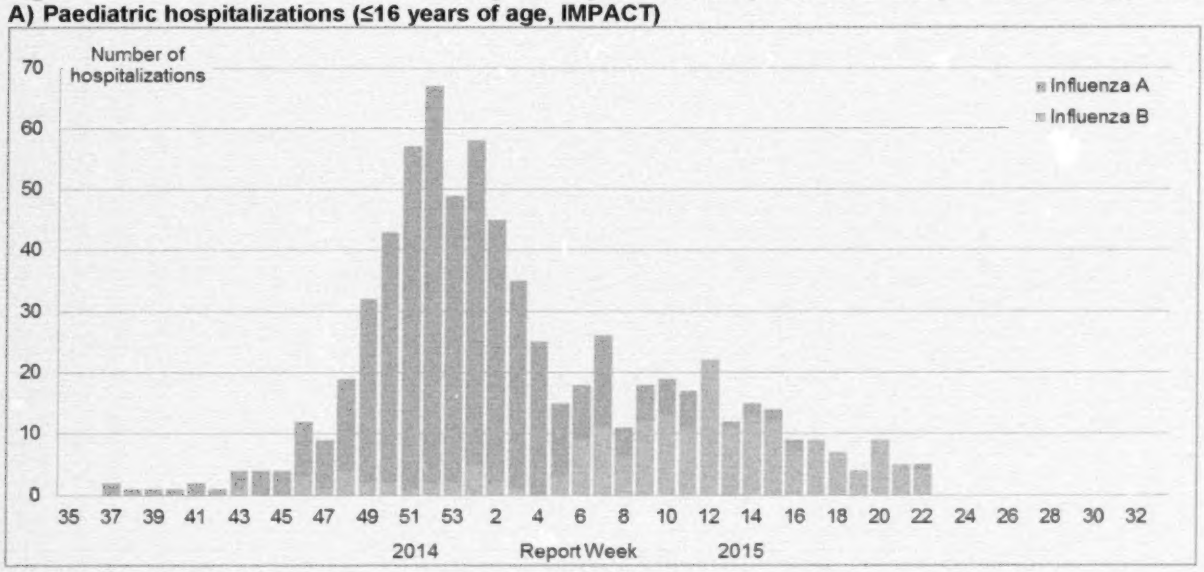
Age groups	Cumulative (24 Aug. 2014 to 6 June 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	84	0	19	65	15	99 (14.0%)
6-23m	114	2	36	76	44	158 (22.4%)
2-4y	124	1	39	84	51	175 (24.8%)
5-9y	129	0	44	85	51	180 (25.5%)
10-16y	60	0	25	35	33	93 (13.2%)
Total	511	3	163	345	194	705
% [1]	72.5%	0.6%	31.9%	67.5%	27.5%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the CIRN network, Canada, 2014-15

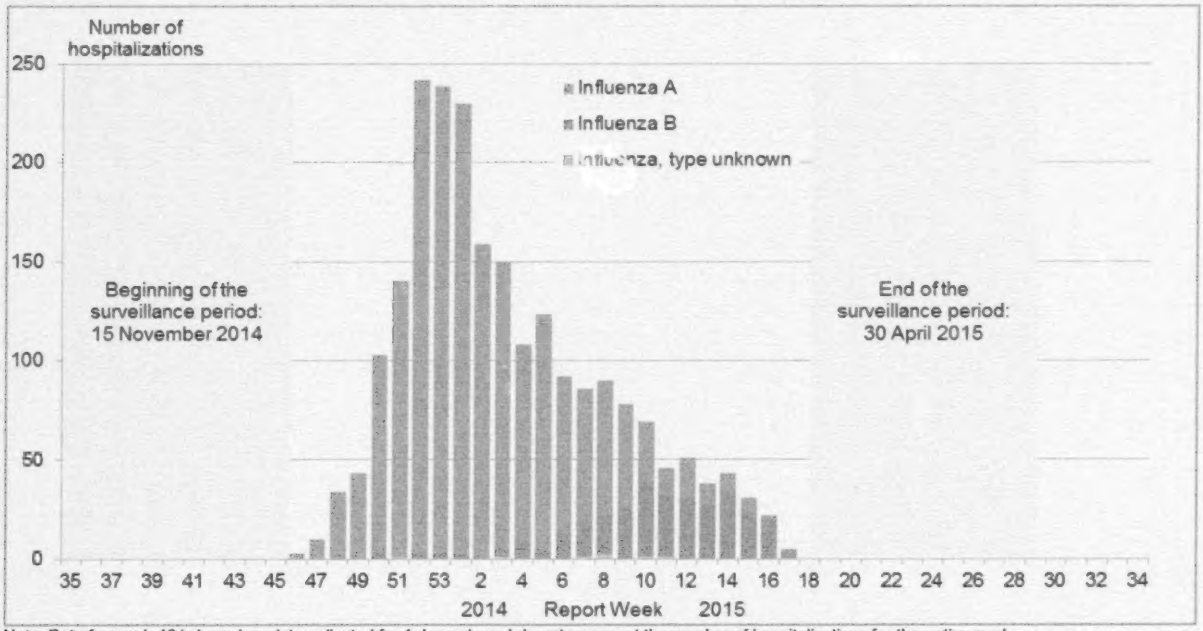
Age groups (years)	Cumulative (15 Nov. 2014 to 2 May 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	3	0	1	2	1	4 (0.2%)
20-44	106	1	56	49	16	122 (5%)
45-64	217	3	99	115	76	293 (13%)
65+	1586	4	760	822	223	1809 (81%)
Total	1912	8	916	988	316	2228
%	86%	0.4%	48%	52%	14%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2014-15
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



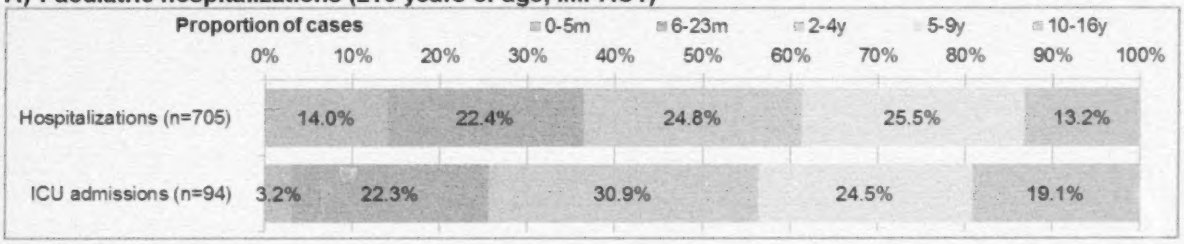
B) Adult hospitalizations (≥16 year of age, CIRN)



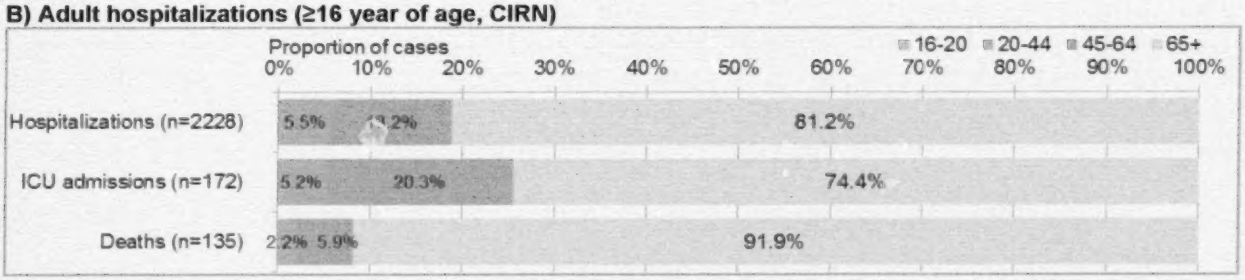
Note: Data for week 46 is based on data collected for 1 day only and do not represent the number of hospitalizations for the entire week.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2014-15

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, CIRN)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 22 and 23, 87 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories*. Of the 87 hospitalizations, 66 (76%) were due to influenza A and 46 (52%) were in patients ≥65 years of age.

Since the start of the 2014-15 season, 7,719 hospitalizations have been reported; 6,631 (86%) with influenza A. Among cases for which the subtype of influenza A was reported, 99.1% were A(H3N2). The majority of cases (70%) were ≥65 years of age (Table 6). A total of 394 ICU admissions have been reported to date: 52% (n=204) were in adults ≥65 years of age and 75% were due to influenza A. A total of 591 deaths have been reported since the start of the season: three children <5 years of age, four children 5-19 years, 45 adults 20-64 years, and 539 adults ≥65 years of age. Influenza A has been reported in 91% of deaths. Adults 65 years of age or older represent 91% of all deaths reported this season. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2014-15

Age groups (years)	Cumulative (24 Aug. 2014 to 6 June 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	428	5	150	273	94	522 (7%)
5-19	283	2	134	147	115	398 (5%)
20-44	398	4	239	155	129	527 (7%)
45-64	638	10	279	349	154	792 (10%)
65+	4828	5	2306	2517	573	5401 (70%)
Unknown	56	1	52	3	23	79 (1%)
Total	6631	27	3160	3444	1088	7719
Percentage[1]	85.9%	0.4%	47.7%	51.9%	14.1%	100.0%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2014-15 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Since the last FluWatch report, no new laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus were reported by the World Health Organization. Globally to June 12, 2015, the WHO reported a total of 657 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 227 deaths. Documents related to the public health risk of influenza A(H7N9), as well as guidance for health professionals and advice for the public is updated regularly on the following websites:

PHAC – Avian influenza A(H7N9)
WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Since the last FluWatch report, 150 new laboratory-confirmed cases and 24 deaths of MERS-CoV have been reported by the World Health Organization. Globally, from September 2012 to June 12, 2015, the WHO has reported a total of 1,289 laboratory-confirmed cases of infection with MERS-CoV, including 455 deaths. The public health risk posed by MERS-CoV in Canada remains low (see the PHAC Assessment of Public Health Risk) and for the latest global risk assessment posted by the WHO on June 3, 2015: WHO MERS-CoV

An outbreak is ongoing in the Republic of Korea originated from an individual who travelled to the Middle East (KSA, Qatar, UAE and Bahrain). Secondary cases have links to healthcare settings (including health care workers, patients on the same ward). This outbreak represents the largest nosocomial oubreak outbside the Middle East. As of June 12, 2015, a total of 126 cases have been confirmed. All but one case were confirmed in the Republic of Korea. A total of 11 deaths have been reported due to this outbreak. Documents related to the public health risk of MERS-CoV, as well as guidance for health professionals and advice for the public is updated regularly on the following websites:

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)
WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update
World Health Organization FluNet
WHO Influenza at the human-animal interface
Centers for Disease Control and Prevention seasonal influenza report
European Centre for Disease Prevention and Control - epidemiological data
South Africa Influenza surveillance report
New Zealand Public Health Surveillance
Australia Influenza Report
Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2014-2015 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

** More than just sporadic as determined by the provincial/territorial epidemiologist.*

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.